SEQUENCE LISTING

<110> Oakley, Robert H.
Barak, Lawrence S.
Laporte, Stephane A.
Caron, Marc G.

<120> Modified G-Protein Coupled Receptors

<130> 033072-026

<140> US 09/993,844
<141> 2001-11-05

<150> US 60/245,772
<151> 2000-11-03

<150> US 60/260,363
<151> 2001-01-08

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<170> FastSEQ for Windows Version 4.0

<210> 1
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<220>
<223> amino acid sequence of wild-type V2R

<400> 1

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 1               5                  10                  15
Pro Ser Leu Pro Ser Asn Ser Ser Gln Glu Arg Pro Leu Asp Thr Arg
            20                  25                  30
Asp Pro Leu Leu Ala Arg Ala Glu Leu Ala Leu Leu Ser Ile Val Phe
        35                  40                  45
Val Ala Val Ala Leu Ser Asn Gly Leu Val Leu Ala Ala Leu Ala Arg
    50                  55                  60
Arg Gly Arg Arg Gly His Trp Ala Pro Ile His Val Phe Ile Gly His
65                  70                  75                  80
Leu Cys Leu Ala Asp Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln
                85                  90                  95
Leu Ala Trp Lys Ala Thr Asp Arg Phe Arg Gly Pro Asp Ala Leu Cys
            100                 105                 110
Arg Ala Val Lys Tyr Leu Gln Met Val Gly Met Tyr Ala Ser Ser Tyr
        115                 120                 125
Met Ile Leu Ala Met Thr Leu Asp Arg His Arg Ala Ile Cys Arg Pro
    130                 135                 140
Met Leu Ala Tyr Arg His Gly Ser Gly Ala His Trp Asn Arg Pro Val
145                 150                 155                 160
Leu Val Ala Trp Ala Phe Ser Leu Leu Leu Ser Leu Pro Gln Leu Phe
                165                 170                 175
```

```
Ile Phe Ala Gln Arg Asn Val Glu Gly Gly Ser Gly Val Thr Asp Cys
            180                 185                 190
Trp Ala Cys Phe Ala Glu Pro Trp Gly Arg Arg Thr Tyr Val Thr Trp
        195                 200                 205
Ile Ala Leu Met Val Phe Val Ala Pro Thr Leu Gly Ile Ala Ala Cys
    210                 215                 220
Gln Val Leu Ile Phe Arg Glu Ile His Ala Ser Leu Val Pro Gly Pro
225                 230                 235                 240
Ser Glu Arg Pro Gly Gly Arg Arg Arg Gly Arg Arg Thr Gly Ser Pro
                245                 250                 255
Gly Glu Gly Ala His Val Ser Ala Ala Val Ala Lys Thr Val Arg Met
            260                 265                 270
Thr Leu Val Ile Val Val Val Tyr Val Leu Cys Trp Ala Pro Phe Phe
        275                 280                 285
Leu Val Gln Leu Trp Ala Ala Trp Asp Pro Glu Ala Pro Leu Glu Gly
    290                 295                 300
Ala Pro Phe Val Leu Leu Met Leu Leu Ala Ser Leu Asn Ser Cys Thr
305                 310                 315                 320
Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
                325                 330                 335
Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            340                 345                 350
Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
        355                 360                 365
Thr Ser Ser
    370
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<210> 2
<211> 413
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of wild-type beta2AR

<400> 2

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Met Gly Gln Pro Gly Asn Gly Ser Ala Phe Leu Leu Ala Pro Asn Arg
 1               5                  10                  15
Ser His Ala Pro Asp His Asp Val Thr Gln Gln Arg Asp Glu Val Trp
            20                  25                  30
Val Val Gly Met Gly Ile Val Met Ser Leu Ile Val Leu Ala Ile Val
        35                  40                  45
Phe Gly Asn Val Leu Val Ile Thr Ala Ile Ala Lys Phe Glu Arg Leu
    50                  55                  60
Gln Thr Val Thr Asn Tyr Phe Ile Thr Ser Leu Ala Cys Ala Asp Leu
65                  70                  75                  80
Val Met Gly Leu Ala Val Val Pro Phe Gly Ala Ala His Ile Leu Met
                85                  90                  95
Lys Met Trp Thr Phe Gly Asn Phe Trp Cys Glu Phe Trp Thr Ser Ile
            100                 105                 110
Asp Val Leu Cys Val Thr Ala Ser Ile Glu Thr Leu Cys Val Ile Ala
        115                 120                 125
Val Asp Arg Tyr Phe Ala Ile Thr Ser Pro Phe Lys Tyr Gln Ser Leu
    130                 135                 140
Leu Thr Lys Asn Lys Ala Arg Val Ile Ile Leu Met Val Trp Ile Val
145                 150                 155                 160
```

```
Ser Gly Leu Thr Ser Phe Leu Pro Ile Gln Met His Trp Tyr Arg Ala
                165                 170                 175
Thr His Gln Glu Ala Ile Asn Cys Tyr Ala Asn Glu Thr Cys Cys Asp
            180                 185                 190
Phe Phe Thr Asn Gln Ala Tyr Ala Ile Ala Ser Ser Ile Val Ser Phe
        195                 200                 205
Tyr Val Pro Leu Val Ile Met Val Phe Val Tyr Ser Arg Val Phe Gln
    210                 215                 220
Glu Ala Lys Arg Gln Leu Gln Lys Ile Asp Lys Ser Glu Gly Arg Phe
225                 230                 235                 240
His Val Gln Asn Leu Ser Gln Val Glu Gln Asp Gly Arg Thr Gly His
                245                 250                 255
Gly Leu Arg Arg Ser Ser Lys Phe Cys Leu Lys Glu His Lys Ala Leu
            260                 265                 270
Lys Thr Leu Gly Ile Ile Met Gly Thr Phe Thr Leu Cys Trp Leu Pro
        275                 280                 285
Phe Phe Ile Val Asn Ile Val His Val Ile Gln Asp Asn Leu Ile Arg
    290                 295                 300
Lys Glu Val Tyr Ile Leu Leu Asn Trp Ile Gly Tyr Val Asn Ser Gly
305                 310                 315                 320
Phe Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe Arg Ile Ala Phe
                325                 330                 335
Gln Glu Leu Leu Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn
            340                 345                 350
Gly Tyr Ser Ser Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val
        355                 360                 365
Glu Gln Glu Lys Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr
    370                 375                 380
Glu Asp Phe Val Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp
385                 390                 395                 400
Ser Gln Gly Arg Asn Cys Ser Thr Asn Asp Ser Leu Leu
                405                 410
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<210> 3
<211> 370
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of beta2-AR-V2R chimera

<400> 3

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 1               5                  10                  15
Ser His Ala Pro Asp His Asp Val Thr Gln Gln Arg Asp Glu Val Trp
            20                  25                  30
Val Val Gly Met Gly Ile Val Met Ser Leu Ile Val Leu Ala Ile Val
        35                  40                  45
Phe Gly Asn Val Leu Val Ile Thr Ala Ile Ala Lys Phe Glu Arg Leu
    50                  55                  60
Gln Thr Val Thr Asn Tyr Phe Ile Thr Ser Leu Ala Cys Ala Asp Leu
65                  70                  75                  80
Val Met Gly Leu Ala Val Val Pro Phe Gly Ala Ala His Ile Leu Met
                85                  90                  95
Lys Met Trp Thr Phe Gly Asn Phe Trp Cys Glu Phe Trp Thr Ser Ile
            100                 105                 110
```

```
Asp Val Leu Cys Val Thr Ala Ser Ile Glu Thr Leu Cys Val Ile Ala
        115                 120                 125
Val Asp Arg Tyr Phe Ala Ile Thr Ser Pro Phe Lys Tyr Gln Ser Leu
    130                 135                 140
Leu Thr Lys Asn Lys Ala Arg Val Ile Ile Leu Met Val Trp Ile Val
145                 150                 155                 160
Ser Gly Leu Thr Ser Phe Leu Pro Ile Gln Met His Trp Tyr Arg Ala
                165                 170                 175
Thr His Gln Glu Ala Ile Asn Cys Tyr Ala Asn Glu Thr Cys Cys Asp
            180                 185                 190
Phe Phe Thr Asn Gln Ala Tyr Ala Ile Ala Ser Ser Ile Val Ser Phe
        195                 200                 205
Tyr Val Pro Leu Val Ile Met Val Phe Val Tyr Ser Arg Val Phe Gln
    210                 215                 220
Glu Ala Lys Arg Gln Leu Gln Lys Ile Asp Lys Ser Glu Gly Arg Phe
225                 230                 235                 240
His Val Gln Asn Leu Ser Gln Val Glu Gln Asp Gly Arg Thr Gly His
                245                 250                 255
Gly Leu Arg Arg Ser Ser Lys Phe Cys Leu Lys Glu His Lys Ala Leu
            260                 265                 270
Lys Thr Leu Gly Ile Ile Met Gly Thr Phe Thr Leu Cys Trp Leu Pro
        275                 280                 285
Phe Phe Ile Val Asn Ile Val His Val Ile Gln Asp Asn Leu Ile Arg
    290                 295                 300
Lys Glu Val Tyr Ile Leu Leu Asn Trp Ile Gly Tyr Val Asn Ser Gly
305                 310                 315                 320
Phe Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe Arg Ile Ala Phe
                325                 330                 335
Gln Glu Leu Leu Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro
            340                 345                 350
Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr
        355                 360                 365
Ser Ser
    370
```

<210> 4
<211> 382
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of MOR-V2R chimera expressed
from the pEArrB-1/MOR vector

<400> 4

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Met Asp Ser Ser Thr Gly Pro Gly Asn Thr Ser Asp Cys Ser Asp Pro
 1               5                  10                  15
Leu Ala Gln Ala Ser Cys Ser Pro Ala Pro Gly Ser Trp Leu Asn Leu
            20                  25                  30
Ser His Val Asp Gly Asn Gln Ser Asp Pro Cys Gly Leu Asn Arg Thr
        35                  40                  45
Gly Leu Gly Gly Asn Asp Ser Leu Cys Pro Gln Thr Gly Ser Pro Ser
    50                  55                  60
Met Val Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val Cys Val
65                  70                  75                  80
Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val Arg Tyr
```

```
                85                  90                  95
Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu Ala Leu
            100                 105                 110
Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val Asn Tyr
        115                 120                 125
Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile Val Ile
    130                 135                 140
Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu Cys Thr
145                 150                 155                 160
Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys Ala Leu
                165                 170                 175
Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Val Asn Val Cys Asn Trp
            180                 185                 190
Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala Thr Thr
        195                 200                 205
Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser His Pro
    210                 215                 220
Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile Phe Ala
225                 230                 235                 240
Phe Ile Met Pro Ile Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile
                245                 250                 255
Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp
            260                 265                 270
Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val Ala Val
        275                 280                 285
Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala
    290                 295                 300
Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe
305                 310                 315                 320
Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Tyr
                325                 330                 335
Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe Cys Ala
            340                 345                 350
Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
        355                 360                 365
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
    370                 375                 380


<210> 5
<211> 382
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of D1AR-V2R chimera expressed
      from the pEArrB-1/D1AR vector

<400> 5
Met Ala Pro Asn Thr Ser Thr Met Asp Glu Ala Gly Leu Pro Ala Glu
 1               5                  10                  15
Arg Asp Phe Ser Phe Arg Ile Leu Thr Ala Cys Phe Leu Ser Leu Leu
            20                  25                  30
Ile Leu Ser Thr Leu Leu Gly Asn Thr Leu Val Cys Ala Ala Val Ile
        35                  40                  45
Arg Phe Arg His Leu Arg Ser Lys Val Thr Asn Phe Phe Val Ile Ser
    50                  55                  60
```

```
Leu Ala Val Ser Asp Leu Leu Val Ala Val Leu Val Met Pro Trp Lys
65                  70                  75                  80
Ala Val Ala Glu Ile Ala Gly Phe Trp Pro Phe Gly Ser Phe Cys Asn
                85                  90                  95
Ile Trp Val Ala Phe Asp Ile Met Cys Ser Thr Ala Ser Ile Leu Asn
            100                 105                 110
Leu Cys Val Ile Ser Val Asp Arg Tyr Trp Ala Ile Ser Ser Pro Phe
        115                 120                 125
Gln Tyr Glu Arg Lys Met Thr Pro Lys Ala Ala Phe Ile Leu Ile Ser
    130                 135                 140
Val Ala Trp Thr Leu Ser Val Leu Ile Ser Phe Ile Pro Val Gln Leu
145                 150                 155                 160
Ser Trp His Lys Ala Lys Pro Thr Trp Pro Leu Asp Gly Asn Phe Thr
                165                 170                 175
Ser Leu Glu Asp Thr Glu Asp Asp Asn Cys Asp Thr Arg Leu Ser Arg
            180                 185                 190
Thr Tyr Ala Ile Ser Ser Ser Leu Ile Ser Phe Tyr Ile Pro Val Ala
        195                 200                 205
Ile Met Ile Val Thr Tyr Thr Ser Ile Tyr Arg Ile Ala Gln Lys Gln
    210                 215                 220
Ile Arg Arg Ile Ser Ala Leu Glu Arg Ala Ala Val His Ala Lys Asn
225                 230                 235                 240
Cys Gln Thr Thr Ala Gly Asn Gly Asn Pro Val Glu Cys Ala Gln Ser
                245                 250                 255
Glu Ser Ser Phe Lys Met Ser Phe Lys Arg Glu Thr Lys Val Leu Lys
            260                 265                 270
Thr Leu Ser Val Ile Met Gly Val Phe Val Cys Cys Trp Leu Pro Phe
        275                 280                 285
Phe Ile Ser Asn Cys Met Val Pro Phe Cys Gly Ser Glu Glu Thr Gln
    290                 295                 300
Pro Phe Cys Ile Asp Ser Ile Thr Phe Asp Val Phe Val Trp Phe Gly
305                 310                 315                 320
Trp Ala Asn Ser Ser Leu Asn Pro Ile Ile Tyr Ala Phe Asn Ala Asp
                325                 330                 335
Phe Gln Lys Ala Phe Ser Thr Leu Leu Gly Cys Tyr Arg Leu Cys Ala
            340                 345                 350
Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
        355                 360                 365
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
    370                 375                 380


<210> 6
<211> 451
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of 5HT1AR-V2R chimera
      expressed from the pEArrB-1/5HT1AR vector

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 1               5                  10                  15
Ala Pro Phe Glu Thr Gly Gly Asn Thr Thr Gly Ile Ser Asp Val Thr
            20                  25                  30
Val Ser Tyr Gln Val Ile Thr Ser Leu Leu Leu Gly Thr Leu Ile Phe
```

```
        35                  40                  45
Cys Ala Val Leu Gly Asn Ala Cys Val Val Ala Ala Ile Ala Leu Glu
    50                  55                  60
Arg Ser Leu Gln Asn Val Ala Asn Tyr Leu Ile Gly Ser Leu Ala Val
65                  70                  75                  80
Thr Asp Leu Met Val Ser Val Leu Val Leu Pro Met Ala Ala Leu Tyr
                85                  90                  95
Gln Val Leu Asn Lys Trp Thr Leu Gly Gln Val Thr Cys Asp Leu Phe
            100                 105                 110
Ile Ala Leu Asp Val Leu Cys Cys Thr Ser Ser Ile Leu His Leu Cys
        115                 120                 125
Ala Ile Ala Leu Asp Arg Tyr Trp Ala Ile Thr Asp Pro Ile Asp Tyr
    130                 135                 140
Val Asn Lys Arg Thr Pro Arg Arg Ala Ala Ala Leu Ile Ser Leu Thr
145                 150                 155                 160
Trp Leu Ile Gly Phe Leu Ile Ser Ile Pro Pro Met Leu Gly Trp Arg
                165                 170                 175
Thr Pro Glu Asp Arg Ser Asp Pro Asp Ala Cys Thr Ile Ser Lys Asp
            180                 185                 190
His Gly Tyr Thr Ile Tyr Ser Thr Phe Gly Ala Phe Tyr Ile Pro Leu
        195                 200                 205
Leu Leu Met Leu Val Leu Tyr Gly Arg Ile Phe Arg Ala Ala Arg Phe
    210                 215                 220
Arg Ile Arg Lys Thr Val Lys Lys Val Glu Lys Thr Gly Ala Asp Thr
225                 230                 235                 240
Arg His Gly Ala Ser Pro Ala Pro Gln Pro Lys Lys Ser Val Asn Gly
                245                 250                 255
Glu Ser Gly Ser Arg Asn Trp Arg Leu Gly Val Glu Ser Lys Ala Gly
            260                 265                 270
Gly Ala Leu Cys Ala Asn Gly Ala Val Arg Gln Gly Asp Asp Gly Ala
        275                 280                 285
Ala Leu Glu Val Ile Glu Val His Arg Val Gly Asn Ser Lys Glu His
    290                 295                 300
Leu Pro Leu Pro Ser Glu Ala Gly Pro Thr Pro Cys Ala Pro Ala Ser
305                 310                 315                 320
Phe Glu Arg Lys Asn Glu Arg Asn Ala Glu Ala Lys Arg Lys Met Ala
                325                 330                 335
Leu Ala Arg Glu Phe Lys Thr Val Lys Thr Leu Gly Ile Ile Met Gly
            340                 345                 350
Thr Phe Ile Leu Cys Trp Leu Pro Phe Phe Ile Val Ala Leu Val Leu
        355                 360                 365
Pro Phe Cys Glu Ser Ser Cys His Met Pro Thr Leu Leu Gly Ala Ile
    370                 375                 380
Ile Asn Trp Leu Gly Tyr Ser Asn Ser Leu Leu Asn Pro Val Ile Tyr
385                 390                 395                 400
Ala Tyr Phe Asn Lys Asp Phe Gln Asn Ala Phe Lys Lys Ile Ile Lys
                405                 410                 415
Cys Asn Phe Cys Ala Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            420                 425                 430
Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
        435                 440                 445
Thr Ser Ser
    450
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<210> 7
<211> 394

<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of beta3AR-V2R chimera
expressed from pEArrB-1/beta3AR vector

<400> 7

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 1               5                  10                  15
Leu Pro Thr Leu Ala Pro Asn Thr Ala Asn Thr Ser Gly Leu Pro Gly
            20                  25                  30
Val Pro Trp Glu Ala Ala Leu Ala Gly Ala Leu Leu Ala Leu Ala Val
        35                  40                  45
Leu Ala Thr Val Gly Gly Asn Leu Leu Val Ile Val Ala Ile Ala Trp
    50                  55                  60
Thr Pro Arg Leu Gln Thr Met Thr Asn Val Phe Val Thr Ser Leu Ala
65                  70                  75                  80
Ala Ala Asp Leu Val Met Gly Leu Leu Val Val Pro Pro Ala Ala Thr
                85                  90                  95
Leu Ala Leu Thr Gly His Trp Pro Leu Gly Ala Thr Gly Cys Glu Leu
            100                 105                 110
Trp Thr Ser Val Asp Val Leu Cys Val Thr Ala Ser Ile Glu Thr Leu
        115                 120                 125
Cys Ala Leu Ala Val Asp Arg Tyr Leu Ala Val Thr Asn Pro Leu Arg
    130                 135                 140
Tyr Gly Ala Leu Val Thr Lys Arg Cys Ala Arg Thr Ala Val Val Leu
145                 150                 155                 160
Val Trp Val Val Ser Ala Ala Val Ser Phe Ala Pro Ile Met Ser Gln
                165                 170                 175
Trp Trp Arg Val Gly Ala Asp Ala Glu Ala Gln Arg Cys His Ser Asn
            180                 185                 190
Pro Arg Cys Cys Ala Phe Ala Ser Asn Met Pro Tyr Val Leu Leu Ser
        195                 200                 205
Ser Ser Val Ser Phe Tyr Leu Pro Leu Leu Val Met Leu Phe Val Tyr
    210                 215                 220
Ala Arg Val Phe Val Val Ala Thr Arg Gln Leu Arg Leu Leu Arg Gly
225                 230                 235                 240
Glu Leu Gly Arg Phe Pro Pro Glu Glu Ser Pro Pro Ala Pro Ser Arg
                245                 250                 255
Ser Leu Ala Pro Ala Pro Val Gly Thr Cys Ala Pro Pro Glu Gly Val
            260                 265                 270
Pro Ala Cys Gly Arg Arg Pro Ala Arg Leu Leu Pro Leu Arg Glu His
        275                 280                 285
Arg Ala Leu Cys Thr Leu Gly Leu Ile Met Gly Thr Phe Thr Leu Cys
    290                 295                 300
Trp Leu Pro Phe Phe Leu Ala Asn Val Leu Arg Ala Leu Gly Gly Pro
305                 310                 315                 320
Ser Leu Val Pro Gly Pro Ala Phe Leu Ala Leu Asn Trp Leu Gly Tyr
                325                 330                 335
Ala Asn Ser Ala Phe Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe
            340                 345                 350
Arg Ser Ala Phe Arg Arg Leu Leu Cys Arg Cys Ala Ala Ala Arg Gly
        355                 360                 365
Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser Cys Thr Thr Ala
    370                 375                 380
Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
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385 390

<210> 8
<211> 362
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of Edg1R-V2R chimera expressed from pEArrB-1/Edg1R vector

<400> 8

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Met Gly Pro Thr Ser Val Pro Leu Val Lys Ala His Arg Ser Ser Val
 1               5                  10                  15
Ser Asp Tyr Val Asn Tyr Asp Ile Ile Val Arg His Tyr Asn Tyr Thr
            20                  25                  30
Gly Lys Leu Asn Ile Ser Ala Asp Lys Glu Asn Ser Ile Lys Leu Thr
        35                  40                  45
Ser Val Val Phe Ile Leu Ile Cys Cys Phe Ile Ile Leu Glu Asn Ile
    50                  55                  60
Phe Val Leu Leu Thr Ile Trp Lys Thr Lys Lys Phe His Arg Pro Met
65                  70                  75                  80
Tyr Tyr Phe Ile Gly Asn Leu Ala Leu Ser Asp Leu Leu Ala Gly Val
                85                  90                  95
Ala Tyr Thr Ala Asn Leu Leu Leu Ser Gly Ala Thr Thr Tyr Lys Leu
            100                 105                 110
Thr Pro Ala Gln Trp Phe Leu Arg Glu Gly Ser Met Phe Val Ala Leu
        115                 120                 125
Ser Ala Ser Val Phe Ser Leu Leu Ala Ile Ala Ile Glu Arg Tyr Ile
    130                 135                 140
Thr Met Leu Lys Met Lys Leu His Asn Gly Ser Asn Asn Phe Arg Leu
145                 150                 155                 160
Phe Leu Leu Ile Ser Ala Cys Trp Val Ile Ser Leu Ile Leu Gly Gly
                165                 170                 175
Leu Pro Ile Met Gly Trp Asn Cys Ile Ser Ala Leu Ser Ser Cys Ser
            180                 185                 190
Thr Val Leu Pro Leu Tyr His Lys His Tyr Ile Leu Phe Cys Thr Thr
        195                 200                 205
Val Phe Thr Leu Leu Leu Leu Ser Ile Val Ile Leu Tyr Cys Arg Ile
    210                 215                 220
Tyr Ser Leu Val Arg Thr Arg Ser Arg Arg Leu Thr Phe Arg Lys Asn
225                 230                 235                 240
Ile Ser Lys Ala Ser Arg Ser Ser Glu Lys Ser Leu Ala Leu Leu Lys
                245                 250                 255
Thr Val Ile Ile Val Leu Ser Val Phe Ile Ala Cys Trp Ala Pro Leu
            260                 265                 270
Phe Ile Leu Leu Leu Leu Asp Val Gly Cys Lys Val Lys Thr Cys Asp
        275                 280                 285
Ile Leu Phe Arg Ala Glu Tyr Phe Leu Val Leu Ala Val Leu Asn Ser
    290                 295                 300
Gly Thr Asn Pro Ile Ile Tyr Thr Leu Thr Asn Lys Glu Met Arg Arg
305                 310                 315                 320
Ala Phe Ile Arg Ile Met Ser Cys Cys Lys Cys Ala Ala Ala Arg Gly
                325                 330                 335
Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser Cys Thr Thr Ala
            340                 345                 350
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Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
355 360

<210> 9
<211> 1113
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of beta2AR-V2R chimera

<400> 9
atggggcaac ccgggaacgg cagcgccttc ttgctggcac ccaatagaag ccatgcgccg 60
gaccacgacg tcacgcagca aagggacgag gtgtgggtgg tgggcatggg catcgtcatg 120
tctctcatcg tcctggccat cgtgtttggc aatgtgctgg tcatcacagc cattgccaag 180
ttcgagcgtc tgcagacggt caccaactac ttcatcactt cactggcctg tgctgatctg 240
gtcatgggcc tggcagtggt gccctttggg gccgcccata ttcttatgaa aatgtggact 300
tttggcaact tctggtgcga gttttggact tccattgatg tgctgtgcgt cacggccagc 360
attgagaccc tgtgcgtgat cgcagtggat cgctactttg ccattacttc acctttcaag 420
taccagagcc tgctgaccaa gaataaggcc cgggtgatca ttctgatggt gtggattgtg 480
tcaggcctta cctccttctt gcccattcag atgcactggt accgggccac ccaccaggaa 540
gccatcaact gctatgccaa tgagacctgc tgtgacttct tcacgaacca agcctatgcc 600
attgcctctt ccatcgtgtc cttctacgtt cccctggtga tcatggtctt cgtctactcc 660
agggtctttc aggaggccaa aaggcagctc cagaagattg acaaatctga gggccgcttc 720
catgtccaga accttagcca ggtggagcag gatgggcgga cggggcatgg actccgcaga 780
tcttccaagt tctgcttgaa ggagcacaaa gccctcaaga cgttaggcat catcatgggc 840
actttcaccc tctgctggct gcccttcttc atcgttaaca ttgtgcatgt gatccaggat 900
aacctcatcc gtaaggaagt ttacatcctc ctaaattgga taggctatgt caattctggt 960
ttcaatcccc ttatctactg ccggagccca gatttcagga ttgccttcca ggagcttctg 1020
tgcgcccggg gacgcacccc acccagcctg ggtccccaag atgagtcctg caccaccgcc 1080
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<210> 10
<211> 1149
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of MOR-V2R chimera

<400> 10
atggacagca gcaccggccc agggaacacc agcgactgct cagacccctt agctcaggca 60
agttgctccc cagcacctgg ctcctggctc aacttgtccc acgttgatgg caaccagtcc 120
gatccatgcg gtctgaaccg caccgggctt ggcgggaacg acagcctgtg ccctcagacc 180
ggcagccctt ccatggtcac agccattacc atcatggccc tctactctat cgtgtgtgta 240
gtgggcctct tcggaaactt cctggtcatg tatgtgattg taagatacac caaaatgaag 300
actgccacca acatctacat tttcaacctt gctctggcag acgccttagc gaccagtaca 360
ctgccctttc agagtgtcaa ctacctgatg ggaacatggc ccttcggaac catcctctgc 420
aagatcgtga tctcaataga ttactacaac atgttcacca gcatattcac cctctgcacc 480
atgagcgtgg accgctacat tgctgtctgc cacccagtca aagccctgga tttccgtacc 540
ccccgaaatg ccaaaatcgt caacgtctgc aactggatcc tctcttctgc catcggtctg 600
cctgtaatgt tcatggcaac cacaaaatac aggcaggggt ccatagattg caccctcacg 660
ttctcccacc caacctggta ctgggagaac ctgctcaaaa tctgtgtctt tatcttcgct 720
ttcatcatgc cgatcctcat catcactgtg tgttacggcc tgatgatctt acgactcaag 780
agcgttcgca tgctatcggg ctccaaagaa aaggacagga atctgcgcag gatcacccgg 840
atggtgctgg tggtcgtggc tgtatttatc gtctgctgga cccccatcca catctacgtc 900

atcatcaaag cgctgatcac gattccagaa accacatttc agaccgtttc ctggcacttc 960
tgcattgctt tgggttacac gaacagctgc ctgaatccag ttctttacgc cttcctggat 1020
gaaaacttca agcgatgctt cagagagttc tgcgcggccg cacggggacg caccccaccc 1080
agcctgggtc cccaagatga gtcctgcacc accgccagct cctccctggc caaggacact 1140
tcatcgtga 1149

<210> 11
<211> 1148
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of D1AR-V2R chimera

<400> 11
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acccttgtct gtgcggccgt catccggttt cgacacctga ggtccaaggt gaccaacttc 180
tttgtcatct ctttagctgt gtcagatctc ttggtggctg tcctggtcat gccctggaaa 240
gctgtggccg agattgctgg cttttggccc tttgggtcct tttgtaacat ctgggtagcc 300
tttgacatca tgtgctctac ggcgtccatt ctgaacctct gcgtgatcag cgtggacagg 360
tactgggcta tctccagccc tttccagtat gagaggaaga tgacccccaa agcagccttc 420
atcctgatta gcgtagcatg gactctgtct gtccttatat ccttcatccc agtacagcta 480
agctggcaca aggcaaagcc cacatggccc ttggatggca attttacctc cctggaggac 540
accgaggatg acaactgtga cacaaggttg agcaggacgt atgccatttc atcgtccctc 600
atcagctttt acatccccgt agccattatg atcgtcacct acaccagtat ctacaggatt 660
gcccagaagc aaaccggcgc atctcagcct tggagagggc agcagtccat gccaagaatt 720
gccagaccac cgcaggtaac gggaaccccg tcgaatgcgc ccagtctgaa agttccttta 780
agatgtcctt caagagggag acgaaagttc taaagacgct gtctgtgatc atgggggtgt 840
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aggagaccca gccattctgc atcgattcca tcaccttcga tgtgtttgtg tggtttgggt 960
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gcctgggtcc ccaagatgag tcctgcacca ccgccagctc ctccctggcc aaggacactt 1140
catcgtga 1148

<210> 12
<211> 1356
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of 5HT1AR-V2R chimera

<400> 12
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accggcggca acactactgg tatctccgac gtgaccgtca gctaccaagt gatcacctct 120
ctgctgctgg gcacgctcat cttctgcgcg gtgctgggca atgcgtgcgt ggtggctgcc 180
atcgccttgg agcgctccct gcagaacgtg gccaattatc ttattggctc tttggcggtc 240
accgacctca tggtgtcggt gttggtgctg cccatggccg cgctgtatca ggtgctcaac 300
aagtggacac tgggccaggt aacctgcgac ctgttcatcg ccctcgacgt gctgtgctgc 360
acctcatcca tcttgcacct gtgcgccatc gcgctggaca ggtactgggc catcacggac 420
cccatcgact acgtgaacaa gaggacgccc cggcgcgccg ctgcgctcat ctcgctcact 480
tggcttattg gcttcctcat ctctatcccg cccatgctgg gctggcgcac cccggaagac 540
cgctcggacc ccgacgcatg caccattagc aaggatcatg gctacactat ctattccacc 600
tttggagctt tctacatccc gctgctgctc atgctggttc tctatgggcg catattccga 660
gctgcgcgct tccgcatccg caagacggtc aaaaaggtgg agaagaccgg agcggacacc 720

cgccatggag catctcccgc cccgcagccc aagaagagtg tgaatggaga gtcggggagc 780
aggaactgga ggctgggcgt ggagagcaag gctgggggtg ctctgtgcgc caatggcgcg 840
gtgaggcaag gtgacgatgg cgccgccctg gaggtgatcg aggtgcaccg agtgggcaac 900
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gcatacttca acaaggactt tcaaaacgcg tttaagaaga tcattaagtg taacttctgc 1260
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<210> 13
<211> 1185
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of beta3-AR-V2R chimera

<400> 13
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ggggccctgc tggcgctggc ggtgctggcc accgtgggag gcaacctgct ggtcatcgtg 180
gccatcgcct ggactccgag actccagacc atgaccaacg tgttcgtgac ttcgctggcc 240
gcagccgacc tggtgatggg actcctggtg gtgccgccgg cggccacctt ggcgctgact 300
ggccactggc cgttgggcgc cactggctgc gagctgtgga cctcggtgga cgtgctgtgt 360
gtgaccgcca gcatcgaaac cctgtgcgcc ctggccgtgg accgctacct ggctgtgacc 420
aacccgctgc gttacggcgc actggtcacc aagcgctgcg cccggacagc tgtggtcctg 480
gtgtgggtcg tgtcggccgc ggtgtcgttt gcgcccatca tgagccagtg gtggcgcgta 540
ggggccgacg ccgaggcgca gcgctgccac tccaacccgc gctgctgtgc cttcgcctcc 600
aacatgccct acgtgctgct gtcctcctcc gtctccttct accttcctct tctcgtgatg 660
ctcttcgtct acgcgcgggt tttcgtggtg gctacgcgcc agctgcgctt gctgcgcggg 720
gagctgggcc gctttccgcc cgaggagtct ccgccggcgc cgtcgcgctc tctggccccg 780
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tgccgctgcg cggccgcacg gggacgcacc ccacccagcc tgggtcccca agatgagtcc 1140
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<210> 14
<211> 1089
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of Edg1-V2R chimera

<400> 14
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aactatgata tcatcgtccg gcattacaac tacacgggaa agctgaatat cagcgcggac 120
aaggagaaca gcattaaact gacctcggtg gtgttcattc tcatctgctg ctttatcatc 180
ctggagaaca tctttgtctt gctgaccatt tggaaaacca agaaattcca ccgacccatg 240
tactatttta ttggcaatct ggccctctca gacctgttgg caggagtagc ctacacagct 300
aacctgctct tgtctggggc caccacctac aagctcactc ccgcccagtg gtttctgcgg 360

gaagggagta tgtttgtggc cctgtcagcc tccgtgttca gtctcctcgc catcgccatt 420
gagcgctata tcacaatgct gaaaatgaaa ctccacaacg ggagcaataa cttccgcctc 480
ttcctgctaa tcagcgcctg ctgggtcatc tccctcatcc tgggtggcct gcctatcatg 540
ggctggaact gcatcagtgc gctgtccagc tgctccaccg tgctgccgct ctaccacaag 600
cactatatcc tcttctgcac cacggtcttc actctgcttc tgctctccat cgtcattctg 660
tactgcagaa tctactcctt ggtcaggact cggagccgcc gcctgacgtt ccgcaagaac 720
atttccaagg ccagccgcag ctctgagaag tcgctggcgc tgctcaagac cgtaattatc 780
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tcatcgtga 1089

<210> 15
<211> 43
<212> PRT
<213> Homo sapiens

<400> 15
Asn Pro Ile Val Tyr Ala Phe Arg Ile Gln Lys Phe Arg Val Thr Phe
 1   5   10   15
Leu Lys Ile Trp Asn Asp His Phe Arg Cys Gln Pro Ala Pro Pro Ile
            20   25   30
Asp Glu Asp Leu Pro Glu Glu Arg Pro Asp Asp
        35   40

<210> 16
<211> 176
<212> PRT
<213> Homo sapiens

<400> 16
Asn Pro Ile Ile Tyr Pro Cys Ser Ser Lys Glu Phe Arg Ala Phe Val
 1   5   10   15
Arg Ile Leu Gly Cys Gln Cys Arg Gly Arg Gly Arg Arg Arg Arg Arg
            20   25   30
Arg Arg Arg Arg Leu Gly Gly Cys Ala Tyr Thr Tyr Arg Pro Trp Thr
        35   40   45
Arg Gly Gly Ser Leu Glu Arg Ser Gln Ser Arg Lys Asp Ser Leu Asp
    50   55   60
Asp Ser Gly Ser Cys Leu Ser Gly Ser Gln Arg Thr Leu Pro Ser Ala
65   70   75   80
Ser Pro Ser Pro Gly Tyr Leu Gly Arg Gly Ala Pro Pro Pro Val Glu
                85   90   95
Leu Cys Ala Phe Pro Glu Trp Lys Ala Pro Gly Ala Leu Leu Ser Leu
            100   105   110
Pro Ala Pro Glu Pro Pro Gly Arg Arg Gly Arg His Asp Ser Gly Pro
        115   120   125
Leu Phe Thr Phe Lys Leu Leu Thr Glu Pro Glu Ser Pro Gly Thr Asp
    130   135   140
Gly Gly Ala Ser Asn Gly Gly Cys Glu Ala Ala Ala Asp Val Ala Asn
145   150   155   160
Gly Gln Pro Gly Phe Lys Ser Asn Met Pro Leu Ala Pro Gly Gln Phe
                165   170   175

<210> 17
<211> 29
<212> PRT
<213> Homo sapiens

<400> 17
Asn Pro Val Ile Tyr Thr Ile Phe Asn His Asp Phe Arg Arg Ala Phe
 1   5   10   15
Lys Lys Ile Leu Cys Arg Gly Asp Arg Lys Arg Ile Val
            20   25

<210> 18
<211> 29
<212> PRT
<213> Human

<400> 18
Asn Pro Val Ile Tyr Thr Ile Phe Asn Gln Asp Phe Arg Arg Ala Phe
 1   5   10   15
Arg Arg Ile Leu Cys Arg Pro Trp Thr Gln Thr Ala Trp
            20   25

<210> 19
<211> 31
<212> PRT
<213> Human

<400> 19
Asn Pro Val Ile Tyr Thr Val Phe Asn Gln Asp Phe Arg Pro Ser Phe
 1   5   10   15
Lys His Ile Leu Phe Arg Arg Arg Arg Arg Arg Gly Phe Arg Gln
            20   25   30

<210> 20
<211> 105
<212> PRT
<213> Homo sapiens

<400> 20
Asn Pro Ile Ile Tyr Cys Arg Ser Pro Asp Phe Arg Lys Ala Phe Gln
 1   5   10   15
Gly Leu Leu Cys Cys Ala Arg Arg Ala Ala Arg Arg Arg His Ala Thr
            20   25   30
His Gly Asp Arg Pro Arg Ala Ser Gly Cys Leu Ala Arg Pro Gly Pro
        35   40   45
Pro Pro Ser Pro Gly Ala Ala Ser Asp Asp Asp Asp Asp Asp Val Val
    50   55   60
Gly Ala Thr Pro Pro Ala Arg Leu Leu Glu Pro Trp Ala Gly Cys Asn
65   70   75   80
Gly Gly Ala Ala Ala Asp Ser Asp Ser Ser Leu Asp Glu Pro Cys Arg
                85   90   95
Pro Gly Phe Ala Ser Glu Ser Lys Val
            100   105

<210> 21
<211> 92
<212> PRT
<213> Homo sapiens

<400> 21
Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe Arg Ile Ala Phe Gln
 1   5   10   15
Glu Leu Leu Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly
            20   25   30
Tyr Ser Ser Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val Glu
        35   40   45
Gln Glu Lys Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr Glu
    50   55   60
Asp Phe Val Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp Ser
65   70   75   80
Gln Gly Arg Asn Cys Ser Thr Asn Asp Ser Leu Leu
                85   90

<210> 22
<211> 120
<212> PRT
<213> Homo sapiens

<400> 22
Asn Pro Ile Ile Tyr Ala Phe Asn Ala Asp Phe Arg Lys Ala Phe Ser
 1   5   10   15
Thr Leu Leu Gly Cys Tyr Arg Leu Cys Pro Ala Thr Asn Asn Ala Ile
            20   25   30
Glu Thr Val Ser Ile Asn Asn Asn Gly Ala Ala Met Phe Ser Ser His
        35   40   45
His Glu Pro Arg Gly Ser Ile Ser Lys Glu Cys Asn Leu Val Tyr Leu
    50   55   60
Ile Pro His Ala Val Gly Ser Ser Glu Asp Leu Lys Lys Glu Glu Ala
65   70   75   80
Ala Gly Ile Ala Arg Pro Leu Glu Lys Leu Ser Pro Ala Leu Ser Val
                85   90   95
Ile Leu Asp Tyr Asp Thr Asp Val Ser Leu Glu Lys Ile Gln Pro Ile
            100   105   110
Thr Gln Asn Gly Gln His Pro Thr
        115   120

<210> 23
<211> 22
<212> PRT
<213> Human

<400> 23
Asn Pro Ile Ile Tyr Thr Thr Phe Asn Ile Glu Phe Arg Lys Ala Phe
 1   5   10   15
Leu Lys Ile Leu His Cys
            20

<210> 24
<211> 22
<212> PRT
<213> Human

<400> 24
Asn Pro Val Ile Tyr Thr Thr Phe Asn Ile Glu Phe Arg Lys Ala Phe
 1   5   10   15
Leu Lys Ile Leu Ser Cys
            20

<210> 25
<211> 24
<212> PRT
<213> Human

<400> 25
Asn Pro Val Ile Tyr Thr Val Phe Asn Ala Glu Phe Arg Asn Val Phe
 1   5   10   15
Arg Lys Ala Leu Arg Ala Cys Cys
            20

<210> 26
<211> 123
<212> PRT
<213> Human

<400> 26
Asn Pro Val Ile Tyr Ala Phe Asn Ala Asp Phe Gln Lys Val Phe Ala
 1   5   10   15
Gln Leu Leu Gly Cys Ser His Phe Cys Ser Arg Thr Pro Val Glu Thr
            20   25   30
Val Asn Ile Ser Asn Glu Leu Ile Ser Tyr Asn Gln Asp Ile Val Phe
        35   40   45
His Lys Glu Ile Ala Ala Ala Tyr Ile His Met Met Pro Asn Ala Val
    50   55   60
Thr Pro Gly Asn Arg Glu Val Asp Asn Asp Glu Glu Glu Gly Pro Phe
65   70   75   80
Asp Arg Met Phe Gln Ile Tyr Gln Thr Ser Pro Asp Gly Asp Pro Val
                85   90   95
Ala Glu Ser Val Trp Glu Leu Asp Cys Glu Gly Glu Ile Ser Leu Asp
            100   105   110
Lys Ile Thr Pro Phe Thr Pro Asn Gly Phe His
        115   120

<210> 27
<211> 47
<212> PRT
<213> Homo sapiens

<400> 27
Asn Pro Met Cys Tyr Ala Leu Cys Asn Lys Ala Phe Arg Asp Thr Phe
 1   5   10   15

Arg Leu Leu Leu Leu Cys Arg Trp Asp Lys Arg Arg Trp Arg Lys Ile
20 25 30
Pro Lys Arg Pro Gly Ser Val His Arg Thr Pro Ser Arg Gln Cys
35 40 45

<210> 28
<211> 31
<212> PRT
<213> Homo sapiens

<400> 28
Asn Pro Ala Cys Tyr Ala Leu Cys Asn Ala Thr Phe Lys Lys Thr Phe
1 5 10 15
Lys His Leu Leu Met Cys His Tyr Lys Asn Ile Gly Ala Thr Arg
20 25 30

<210> 29
<211> 51
<212> PRT
<213> Homo sapiens

<400> 29
Asn Pro Val Cys Tyr Ala Leu Cys Asn Lys Thr Phe Arg Thr Thr Phe
1 5 10 15
Lys Met Leu Leu Leu Cys Gln Cys Asp Lys Lys Lys Arg Arg Lys Gln
20 25 30
Gln Tyr Gln Gln Arg Gln Ser Val Ile Phe His Lys Arg Ala Pro Glu
35 40 45
Gln Ala Leu
50

<210> 30
<211> 31
<212> PRT
<213> Homo sapiens

<400> 30
Asn Pro Ala Cys Tyr Ala Leu Cys Asn Ala Thr Phe Lys Lys Thr Phe
1 5 10 15
Arg His Leu Leu Leu Cys Gln Tyr Arg Asn Ile Gly Thr Ala Arg
20 25 30

<210> 31
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> m5 muscarinic receptor

<400> 31
Asn Pro Ile Cys Tyr Ala Leu Cys Asn Arg Thr Phe Arg Lys Thr Phe
1 5 10 15

Lys Met Leu Leu Leu Cys Arg Trp Lys Lys Lys Lys Val Glu Glu Lys
20 25 30
Leu Tyr Trp Gln Gly Asn Ser Lys Leu Pro
35 40

<210> 32
<211> 24
<212> PRT
<213> Homo sapiens

<400> 32
Asn Pro Val Ile Tyr Ala Tyr Phe Asn Lys Asp Phe Gln Asn Ala Phe
1 5 10 15
Lys Lys Ile Ile Lys Cys Lys Phe
20

<210> 33
<211> 26
<212> PRT
<213> Homo sapiens

<400> 33
Asn Pro Ile Ile Tyr Thr Met Ser Asn Glu Asp Phe Lys Gln Ala Phe
1 5 10 15
His Lys Leu Ile Arg Phe Lys Cys Thr Ser
20 25

<210> 34
<211> 24
<212> PRT
<213> Homo sapiens

<400> 34
Asn Pro Leu Leu Tyr Thr Ser Phe Asn Glu Asp Phe Lys Leu Ala Phe
1 5 10 15
Lys Lys Leu Ile Arg Cys Arg Glu
20

<210> 35
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> olfactory receptor 6A1

<400> 35
Asn Pro Ile Ile Tyr Cys Leu Arg Asn Gln Glu Val Lys Arg Ala Leu
1 5 10 15
Cys Cys Ile Leu His Leu Tyr Gln His Gln Asp Pro Asp Pro Lys Lys
20 25 30
Gly Ser Arg Asn Val
35

<210> 36
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> olfactory receptor 2C1

<400> 36
Asn Pro Leu Ile Tyr Thr Leu Arg Asn Met Glu Val Lys Gly Ala Leu
 1   5   10   15
Arg Arg Leu Leu Gly Lys Gly Arg Glu Val Gly
            20   25

<210> 37
<211> 62
<212> PRT
<213> Homo sapiens

<400> 37
Asn Pro Leu Phe Tyr Gly Phe Leu Gly Lys Lys Phe Lys Arg Tyr Phe
 1   5   10   15
Leu Gln Leu Leu Lys Tyr Ile Pro Pro Lys Ala Lys Ser His Ser Asn
            20   25   30
Leu Ser Thr Lys Met Ser Thr Leu Ser Tyr Arg Pro Ser Asp Asn Val
        35   40   45
Ser Ser Ser Thr Lys Lys Pro Ala Pro Cys Phe Glu Val Glu
    50   55   60

<210> 38
<211> 50
<212> PRT
<213> Homo sapiens

<400> 38
Asn Pro Phe Leu Tyr Cys Phe Val Gly Asn Arg Phe Gln Gln Lys Leu
 1   5   10   15
Arg Ser Val Phe Arg Val Pro Ile Thr Trp Leu Gln Gly Lys Arg Glu
            20   25   30
Ser Met Ser Cys Arg Lys Ser Ser Ser Leu Arg Glu Met Glu Thr Phe
        35   40   45
Val Ser
    50

<210> 39
<211> 51
<212> PRT
<213> Homo sapiens

<400> 39
Asn Pro Leu Ile Tyr Ala Phe Ile Gly Gln Lys Phe Arg His Gly Leu
 1   5   10   15

Leu Lys Ile Leu Ala Ile His Gly Leu Ile Ser Lys Asp Ser Leu Pro
20 25 30
Lys Asp Ser Arg Pro Ser Phe Val Gly Ser Ser Ser Gly His Thr Ser
35 40 45
Thr Thr Leu
50

<210> 40
<211> 67
<212> PRT
<213> Artificial Sequence

<220>
<223> cx3c chemokine receptor 1 (cx3crl) (fractalkine receptor)

<400> 40
Asn Pro Leu Ile Tyr Ala Phe Ala Gly Glu Lys Phe Arg Arg Tyr Leu
1 5 10 15
Tyr His Leu Tyr Gly Lys Cys Leu Ala Val Leu Cys Gly Arg Ser Val
20 25 30
His Val Asp Phe Ser Ser Ser Glu Ser Gln Arg Ser Arg His Gly Ser
35 40 45
Val Leu Ser Ser Asn Phe Thr Tyr His Thr Ser Asp Gly Asp Ala Leu
50 55 60
Leu Leu Leu
65

<210> 41
<211> 59
<212> PRT
<213> Human

<400> 41
Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg His Ile Phe
1 5 10 15
Leu Ala Thr Leu Ala Cys Leu Cys Pro Val Trp Arg Arg Arg Arg Lys
20 25 30
Arg Pro Ala Phe Ser Arg Lys Ala Asp Ser Val Ser Ser Asn His Thr
35 40 45
Leu Ser Ser Asn Ala Thr Arg Glu Thr Leu Tyr
50 55

<210> 42
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> substance-P receptor (SPR) (NK-1 receptor) (NK-1R)

<400> 42
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
1 5 10 15

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Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
            20                  25                  30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Gln Gly Ser Val
        35                  40                  45
Tyr Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala
    50                  55                  60
His Glu Glu Glu Pro Glu Asp Gly Pro Lys Ala Thr Pro Ser Ser Leu
65                  70                  75                  80
Asp Leu Thr Ser Asn Cys Ser Ser Arg Ser Asp Ser Lys Thr Met Thr
                85                  90                  95
Glu Ser Phe Ser Phe Ser Ser Asn Val Leu Ser
            100                 105


<210> 43
<211> 50
<212> PRT
<213> Homo sapiens

<400> 43
Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Val Ser Ser Glu Leu Arg
 1               5                  10                  15
Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro
            20                  25                  30
Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr
        35                  40                  45
Ser Ser
    50


<210> 44
<211> 83
<212> PRT
<213> Human

<400> 44
Asn Pro Val Ile Tyr Asn Leu Met Ser Gln Lys Phe Arg Ala Ala Phe
 1               5                  10                  15
Arg Lys Leu Cys Asn Cys Lys Gln Lys Pro Thr Glu Lys Pro Ala Asn
            20                  25                  30
Tyr Ser Val Ala Leu Asn Tyr Ser Val Ile Lys Glu Ser Asp His Phe
        35                  40                  45
Ser Thr Glu Leu Asp Asp Ile Thr Val Thr Asp Thr Tyr Leu Ser Ala
    50                  55                  60
Thr Lys Val Ser Phe Asp Asp Thr Cys Leu Ala Ser Glu Val Ser Phe
65                  70                  75                  80
Ser Gln Ser



<210> 45
<211> 65
<212> PRT
<213> Human

<400> 45
Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
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 1               5                  10                  15
Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg
            20                  25                  30
Leu Gly Glu Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Ser Phe Val
        35                  40                  45
Leu Ser His Arg Ser Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
    50                  55                  60
Ala
65
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<210> 46
<211> 75
<212> PRT
<213> Homo sapiens

<400> 46

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Asn Pro Val Leu Tyr Ser Leu Met Ser Ser Arg Phe Arg Glu Thr Phe
 1               5                  10                  15
Gln Glu Ala Leu Cys Leu Gly Ala Cys Cys His Arg Leu Arg Pro Arg
            20                  25                  30
His Ser Ser His Ser Leu Ser Arg Met Thr Thr Gly Ser Thr Leu Cys
        35                  40                  45
Asp Val Gly Ser Leu Gly Ser Trp Val His Pro Leu Ala Gly Asn Asp
    50                  55                  60
Gly Pro Glu Ala Gln Gln Glu Thr Asp Pro Ser
65                  70                  75
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<210> 47
<211> 62
<212> PRT
<213> Homo sapiens

<400> 47

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Asn Pro Leu Val Tyr Cys Phe Met His Arg Arg Phe Arg Gln Ala Cys
 1               5                  10                  15
Leu Glu Thr Cys Ala Arg Cys Cys Pro Arg Pro Pro Arg Ala Arg Pro
            20                  25                  30
Arg Ala Leu Pro Asp Glu Asp Pro Pro Thr Pro Ser Ile Ala Ser Leu
        35                  40                  45
Ser Arg Leu Ser Tyr Thr Thr Ile Ser Thr Leu Gly Pro Gly
    50                  55                  60
```

<210> 48
<211> 82
<212> PRT
<213> Homo sapiens

<400> 48

```
Asn Pro Leu Val Tyr Ala Leu Ala Ser Arg His Phe Arg Ala Arg Phe
 1               5                  10                  15
Arg Arg Leu Trp Pro Cys Gly Arg Arg Arg Arg His Arg Ala Arg Arg
            20                  25                  30
Ala Leu Arg Arg Val Arg Pro Ala Ser Ser Gly Pro Pro Gly Cys Pro
        35                  40                  45
```

Gly Asp Ala Arg Pro Ser Gly Arg Leu Leu Ala Gly Gly Gly Gln Gly
50 55 60
Pro Glu Pro Arg Glu Gly Pro Val His Gly Gly Glu Ala Ala Arg Gly
65 70 75 80
Pro Glu

<210> 49
<211> 76
<212> PRT
<213> Human

<400> 49
Asn Pro Ile Ile Tyr Thr Leu Thr Asn Lys Glu Met Arg Arg Ala Phe
1 5 10 15
Ile Arg Ile Met Ser Cys Cys Lys Cys Pro Ser Gly Asp Ser Ala Gly
20 25 30
Lys Phe Lys Arg Pro Ile Ile Ala Gly Met Glu Phe Ser Arg Ser Lys
35 40 45
Ser Asp Asn Ser Ser His Pro Gln Lys Asp Glu Gly Asp Asn Pro Glu
50 55 60
Thr Ile Met Ser Ser Gly Asn Val Asn Ser Ser Ser
65 70 75

<210> 50
<211> 80
<212> PRT
<213> Homo sapiens

<400> 50
Asn Pro Ile Ile Tyr Ala Leu Arg Ser Lys Asp Leu Arg His Ala Phe
1 5 10 15
Arg Ser Met Phe Pro Ser Cys Glu Gly Thr Ala Gln Pro Leu Asp Asn
20 25 30
Ser Met Gly Asp Ser Asp Cys Leu His Lys His Ala Asn Asn Ala Ala
35 40 45
Ser Val His Arg Ala Ala Glu Ser Cys Ile Lys Ser Thr Val Lys Ile
50 55 60
Ala Lys Val Thr Met Ser Val Ser Thr Asp Thr Ser Ala Glu Ala Leu
65 70 75 80

<210> 51
<211> 59
<212> PRT
<213> Human

<400> 51
Asn Pro Val Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe
1 5 10 15
Arg Gln Leu Cys Arg Lys Pro Cys Gly Arg Pro Asp Pro Ser Ser Phe
20 25 30
Ser Arg Pro Arg Glu Ala Thr Ala Arg Glu Arg Val Thr Ala Cys Thr
35 40 45
Pro Ser Asp Gly Pro Gly Gly Gly Arg Ala Ala

50 55

<210> 52
<211> 58
<212> PRT
<213> Human

<400> 52
Asp Pro Phe Val Tyr Tyr Phe Val Ser His Asp Phe Arg Asp His Ala
1 5 10 15
Lys Asn Ala Leu Leu Cys Arg Ser Val Arg Thr Val Lys Gln Met Gln
20 25 30
Val Ser Leu Thr Ser Lys Lys His Ser Arg Lys Ser Ser Ser Tyr Ser
35 40 45
Ser Ser Ser Thr Thr Val Lys Thr Ser Tyr
50 55

<210> 53
<211> 66
<212> PRT
<213> Rat

<400> 53
Asn Gly Glu Val Gln Ala Glu Leu Arg Arg Lys Trp Arg Arg Trp His
1 5 10 15
Leu Gln Gly Val Leu Gly Trp Ser Ser Lys Ser Gln His Pro Trp Gly
20 25 30
Gly Ser Asn Gly Ala Thr Cys Ser Thr Gln Val Ser Met Leu Thr Arg
35 40 45
Val Ser Pro Ser Ala Arg Arg Ser Ser Ser Phe Gln Ala Glu Val Ser
50 55 60
Leu Val
65

<210> 54
<211> 90
<212> DNA
<213> Human

<400> 54
gcccggggac gcaccccacc cagcctgggt ccccaagatg agtcctgcac caccgccagc 60
tcctccctgg ccaaggacac ttcatcgtga 90

<210> 55
<211> 114
<212> DNA
<213> Human

<400> 55
gcggccgcac ggggacgcac cccacccagc ctgggtcccc aagatgagtc ctgcaccacc 60
gccagctcct ccctggccaa ggacacttca tcgtgaagat ctccgcggtc taga 114

<210> 56
<211> 31

<212> PRT
<213> Artificial Sequence

<220>
<223> carboxy terminus of modified GPCR

<400> 56
Ala Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu
 1   5   10   15
Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
            20   25   30

<210> 57
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of V2R

<400> 57
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
 1   5   10   15
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
            20   25   30

<210> 58
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 58
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
 1   5   10   15
Cys Thr Thr Ala
            20

<210> 59
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 59
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
 1   5   10   15
Cys Thr Thr Ala Ala Ala Ala Leu Ala Lys Asp Ala Ala Ala
            20   25   30

<210> 60
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 60
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Ala Ala Ala
20 25 30

<210> 61
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 61
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ala Ala Ala Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 62
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> beta-2AR mutant receptor

<400> 62
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ala Ala Ala Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 63
<211> 73
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of beta-2AR

<400> 63
Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly Tyr Ser Ser
1 5 10 15

Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val Glu Gln Glu Lys
20 25 30
Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr Glu Asp Phe Val
35 40 45
Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp Ser Gln Gly Arg
50 55 60
Asn Cys Ser Thr Asn Asp Ser Leu Leu
65 70

<210> 64
<211> 83
<212> PRT
<213> Artificial Sequence

<220>
<223> beta-2AR mutant receptor

<400> 64
Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly Tyr Ser Ser
1 5 10 15
Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val Glu Gln Glu Lys
20 25 30
Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr Glu Asp Phe Val
35 40 45
Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp Ser Gln Gly Arg
50 55 60
Asn Cys Ser Thr Asn Asp Ser Leu Leu Ser Ser Ser Leu Ala Lys Asp
65 70 75 80
Thr Ser Ser

<210> 65
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> beta-2AR mutant receptor

<400> 65
Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly Tyr Ser Ser
1 5 10 15
Asn Gly Asn Thr Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 66
<211> 51
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of V2R

<400> 66

```
Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
 1               5                  10                  15
Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            20                  25                  30
Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
        35                  40                  45
Thr Ser Ser
    50
```

<210> 67
<211> 51
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 67

```
Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
 1               5                  10                  15
Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            20                  25                  30
Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ala Ala Ala Ala Lys Asp
        35                  40                  45
Thr Ser Ser
    50
```

<210> 68
<211> 52
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 68

```
Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
 1               5                  10                  15
Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            20                  25                  30
Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
        35                  40                  45
Thr Ala Ala Ala
    50
```

<210> 69
<211> 60
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of NTR-1

<400> 69

```
Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg Gln Val Phe
 1               5                  10                  15
Leu Ser Thr Leu Ala Cys Leu Cys Pro Gly Trp Arg His Arg Arg Lys
            20                  25                  30
Lys Arg Pro Thr Phe Ser Arg Lys Pro Asn Ser Met Ser Ser Asn His
        35                  40                  45
Ala Phe Ser Thr Ser Ala Thr Arg Glu Thr Leu Tyr
    50                  55                  60
```

<210> 70
<211> 60
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 70

```
Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg Gln Val Phe
 1               5                  10                  15
Leu Ser Thr Leu Ala Cys Leu Cys Pro Gly Trp Arg His Arg Arg Lys
            20                  25                  30
Lys Arg Pro Thr Phe Ser Arg Lys Pro Asn Ser Ala Ser Ala Ala His
        35                  40                  45
Ala Phe Ser Thr Ser Ala Thr Arg Glu Thr Leu Tyr
    50                  55                  60
```

<210> 71
<211> 60
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 71

```
Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg Gln Val Phe
 1               5                  10                  15
Leu Ser Thr Leu Ala Cys Leu Cys Pro Gly Trp Arg His Arg Arg Lys
            20                  25                  30
Lys Arg Pro Thr Phe Ser Arg Lys Pro Asn Ser Met Ser Ser Asn His
        35                  40                  45
Ala Phe Ser Ala Ala Ala Thr Arg Glu Thr Leu Tyr
    50                  55                  60
```

<210> 72
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of OTR

<400> 72

Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
1 5 10 15
Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg
20 25 30
Leu Gly Glu Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Ser Phe Val
35 40 45
Leu Ser His Arg Ser Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
50 55 60
Ala
65

<210> 73
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 73
Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
1 5 10 15
Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Ala
20 25 30
Ala Ala Ala Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Ser Phe Val
35 40 45
Leu Ser His Arg Ser Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
50 55 60
Ala
65

<210> 74
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 74
Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
1 5 10 15
Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg
20 25 30
Leu Gly Glu Thr Ser Ala Ala Ala Ala Ser Asn Ser Ser Ser Phe Val
35 40 45
Leu Ser His Arg Ser Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
50 55 60
Ala
65

<210> 75
<211> 65
<212> PRT

<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 75
Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
 1   5   10   15
Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg
            20   25   30
Leu Gly Glu Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Ser Phe Val
        35   40   45
Leu Ser His Arg Ala Ala Ala Gln Arg Ser Cys Ser Gln Pro Ser Thr
    50   55   60
Ala
65

<210> 76
<211> 105
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of SPR

<400> 76
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1   5   10   15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
            20   25   30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Gln Gly Val Tyr
        35   40   45
Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala His
    50   55   60
Glu Glu Glu Pro Glu Gly Pro Lys Ala Thr Pro Ser Ser Leu Lys Leu
65   70   75   80
Thr Ser Asn Cys Ser Ser Arg Ser Asp Ser Lys Thr Met Thr Glu Ser
                85   90   95
Phe Ser Phe Ser Ser Asn Val Leu Ser
            100   105

<210> 77
<211> 66
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 77
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1   5   10   15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
            20   25   30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Gln Gly Val Tyr

```
        35                  40                  45
Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala His
    50                  55                  60
Glu Glu
65
```

<210> 78
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 78

```
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1               5                  10                  15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
            20                  25                  30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr
        35                  40
```

<210> 79
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 79

```
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1               5                  10                  15
Lys His Ala Phe
            20
```

<210> 80
<211> 69
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 80

```
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1               5                  10                  15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
            20                  25                  30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Ala Ala Val Ala
        35                  40                  45
Ala Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala His
    50                  55                  60
Glu Glu Glu Pro Glu
```

65

<210> 81
<211> 68
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 81
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
1 5 10 15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
20 25 30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Gln Gly Val Tyr
35 40 45
Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Ala Gly Ala Ala
50 55 60
Glu Glu Glu Pro
65

<210> 82
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid motif

<221> VARIANT
<222> 3, 4
<223> Xaa = Any Amino Acid

<400> 82
Asn Pro Xaa Xaa Tyr
1 5